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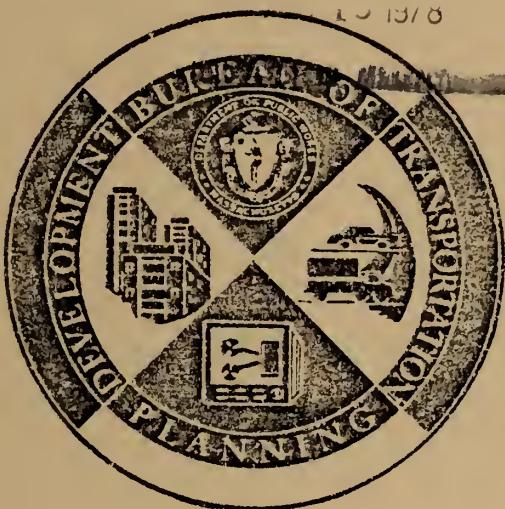
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**HIGHWAY
PLANNING
PROGRAM**

GOVERNMENT DOCUMENTS
COLLECTION

L-13/8

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HPR-PL 1(12)

PART 1

HIGHWAY PLANNING

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

755/61

1977 HIGHWAY PLANNING PROGRAM

HPR-PL-1 (12)

MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

BUREAU OF TRANSPORTATION PLANNING AND DEVELOPMENT

100 NASHUA STREET

BOSTON, MASSACHUSETTS 02114

JANUARY 1, 1977



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MASSACHUSETTS HPR-PL-1 (12) WORK PROGRAM - PART 1

CALENDAR YEAR 1977

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BUREAU OF TRANSPORTATION PLANNING AND DEVELOPMENT BUDGET SUMMARY TABLE

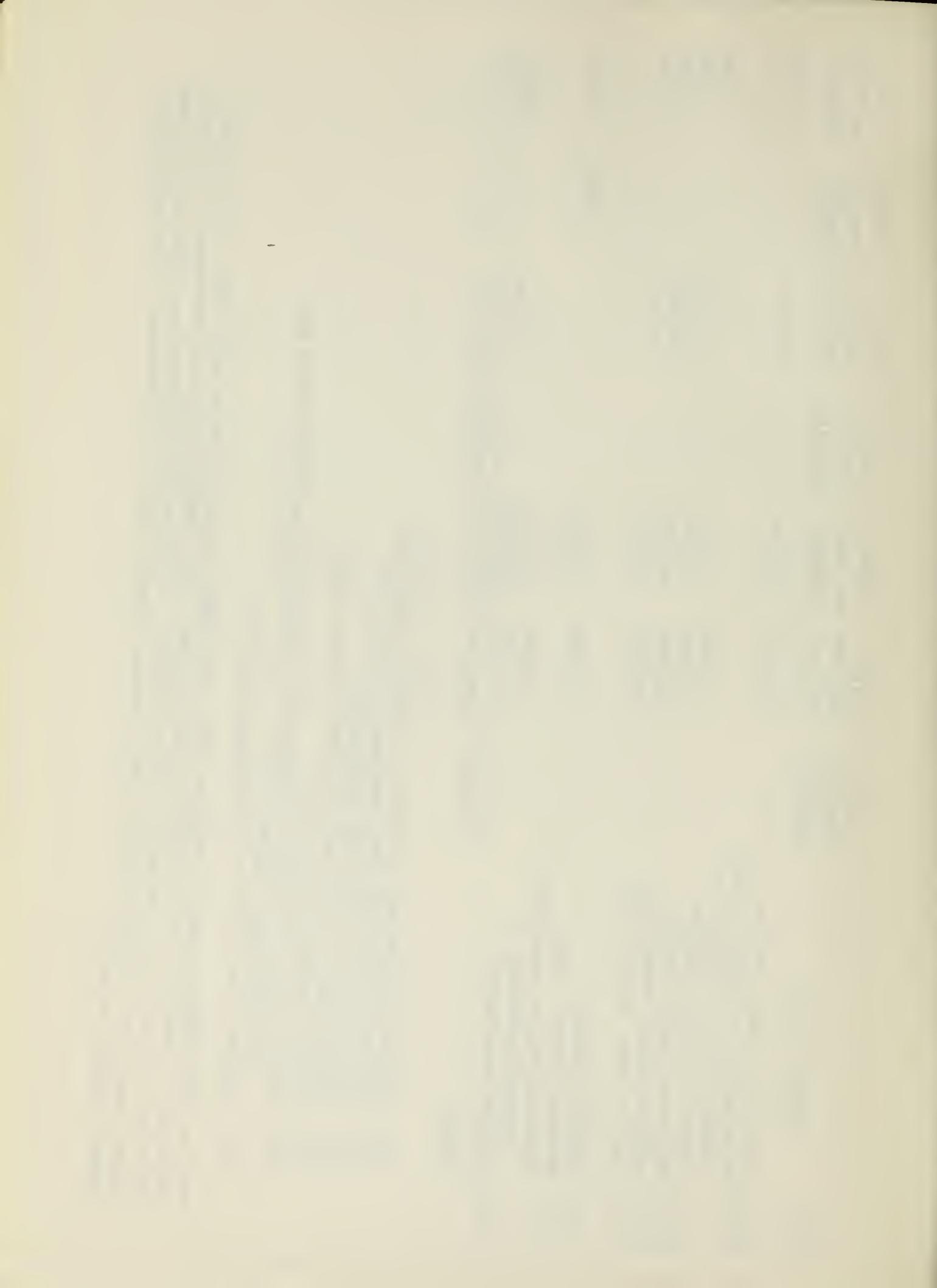
Prog. No.	Program Title	1976 Est PL Cost(\$)	1976 Est HPR Cost(\$)	1976 Est Total Cost(\$)	1977 Est PL Cost(\$)	1977 Est HPR Cost(\$)	1977 * State/PE Cost(\$)	1977 Est Total Cost(\$)
1-0	ADMINISTRATION	-			-	-	-	250,000
1-1	Planning Administration	-		201,000	-	-	-	250,000
2-0	DATA COLLECTION SERVICES	-						
2-1	Rural & Urban Road Inventory	-		164,000	-	168,000	-	168,000
2-3	Defense Rtes. Bridge Record	-		5,000	5,000	-	-	2,000
2-6	Nat'l RR-Hwy. Crossing Inv. (1)	-		2,500	2,500	-	-	-
3-0	INFORMATION SERVICES	-						
3-1	Mapping Services	-		180,000	-	48,000	-	48,000
3-3	Information Systems Develop.	-		40,000	40,000	-	40,000	40,000
3-4	Trans. Reference Library	-		30,000	30,000	-	15,000	15,000
4-0	TRAFFIC VOLUME ACTIVITIES	-						
4-1	Traffic Volume Counting	-		420,000	-	290,000	228,000	518,000
4-3	Vehicle Weight Study	-		0	0	-	20,000	20,000
4-7	Traffic Anal. & Forecasting	-		33,000	33,000	-	58,000	58,000
5-0	TRANSPORTATION STATISTICS	-						
5-1	Motor Vehicle Statistics	-		15,000	15,000	-	-	15,000

Prog. No.	Program Title	1976 Est PL Cost (\$)	1976 Est HPR Cost (\$)	1976 Est Total Cost (\$)	1977 Est PL Cost (\$)	1977 Est HPR Cost (\$)	1977 * State/PE Cost (\$)	1977 Est Total Cost (\$)
STATEWIDE TRANS. SYSTEMS PLANNING & PROGRAMMING								
7-1	Highway Functional Class.	-	70,000	70,000	-	32,000	-	32,000
7-2	Hwy. Needs Identification	-	22,000	22,000	-	60,000	-	60,000
7-3	Fiscal Planning - Highways	-	95,000	95,000	-	140,000	140,000	140,000
7-4	Transportation Modelling (2)	-	175,000	175,000	-	190,000	-	190,000
7-5	Hwy.-Rel. Plan. Activities (3)	-	40,000	40,000	-	65,000	65,000	65,000
7-6	Planning for Non-Highway Modes (4)	-	25,000	25,000	-	25,000	-	25,000
7-7	Comprehensive Trans. Plan (5)	-	15,000	15,000	-	60,000	-	60,000
REGIONAL/URBAN TRANS. PLAN.								
8-1	Berkshire County Region	32,500	47,500	80,000	65,000	34,000	-	99,000
8-1A	Berkshire County RPS	-	100,000	100,000	150,000	-	-	150,000
8-2	Franklin County Region	-	44,000	44,000	-	64,000	-	64,000
8-2A	Franklin Cty. Public Trans. Demonstration Program (6)	-	-	-	-	-	-	-
8-3	Lower Pioneer Valley Region	110,000	39,000	149,000	122,250	29,000	-	151,250
8-4	Montachusetts Region	45,000	70,000	115,000	80,000	34,000	-	114,000
8-5	Central Massachusetts Region	54,000	29,500	83,500	130,500	24,000	-	154,500
8-6	Northern Middlesex Region	50,000	16,000	66,000	75,000	19,000	-	94,000
8-7	Merrimack Valley Region	63,000	30,500	93,500	80,000	24,000	-	104,000
8-8	Metropolitan Boston Region	500,000	44,000	544,000	519,000	47,000	-	566,000
8-9	Old Colony Region	70,000	17,000	87,000	75,000	19,000	-	94,000
8-10	S. E. Massachusetts Region	140,000	35,000	175,000	103,750	27,000	-	130,750

Prog. No.	Program Title	1976		1976		1977		1977 *	
		Est PL Cost (\$)	Est HPR Cost (\$)	Est Total Cost (\$)	Est PL Cost (\$)	Est HPR Cost (\$)	State/PE Cost (\$)	Est Total Cost (\$)	
8-11	Barnstable County Region Demonstration Program (6)	-	42,000	42,000	-	47,000	-	47,000	
8-11A	Barnstable Cty. Public Trans.	-	-	-	-	-	-	-	
8-12	Martha's Vineyard Region	-	7,500	7,500	-	17,000	-	17,000	
8-13	Nantucket County Region	-	22,000	22,000	-	17,000	-	17,000	
8-14	Regional Trans. Modelling	-	36,000	36,000	-	25,000	-	25,000	
8-15	Eastern Mass. Trans. Study	-	70,000	70,000	-	75,000	-	75,000	
11-0	SPECIAL STUDIES	-	-	-	-	-	-	-	
11-4	National Trans. Study	-	13,000	13,000	-	-	5,000	5,000	
11-8	National Bridge Inspection Program Inventory (7)	-	40,000	40,000	-	-	-	-	
11-14	Program Development	-	115,000	115,000	-	25,000	-	25,000	
	TOTALS	1,064,500	2,350,500	3,415,000	1,400,500	1,402,000	836,000	3,638,500	

- (1) Program transferred to Bureau of Traffic Operations
- (2) Combines former 1976 HPR Programs 8-16 and 8-17
- (3) Formerly part of 1976 HPR Program 6-4
- (4) Formerly part of 1976 HPR Programs 6-4 and 11-14
- (5) Former 1976 HPR Program 7-4
- (6) Funded under 1973 Federal Highway Act; BTP&D administrative costs are included under Program 11-14
- (7) Program transferred to Maintenance Division

* For the 1976 Highway Planning Program (HPP), all BTP&D activities were HPR funded. Due to the reduction in HPR funds anticipated for the 1977 HPP, many BTP&D activities otherwise eligible for HPR funding have been scheduled for state funding. In the event that additional HPR or PL funds become available, certain eligible BTP&D program elements will be transferred to the appropriate Federal funding category.



INTRODUCTION

The primary objective of this work program is to describe the proposed activities of the Bureau of Transportation Planning and Development for calendar year 1977. In addition, this document:

1. Describes the BTP&D accomplishments during 1976.
2. Identifies the major BTP&D goals for 1977.
3. Serves as a management tool which relates the latest BTP&D Five-Year Unified Transportation Work Program to the HPR work to be performed during 1977. As such, it is the basis for allocating available resources for 1977 to BTP&D units and the regional planning agencies (RPA's)
4. Serves as the coordinating mechanism through which various transportation planning functions are integrated with other activities of the Mass. Dept. of Public Works, the Executive Office of Trans. & Const., the Office of State Planning, other State agencies and the RPA's.
5. Serves as the basis for applying for federal planning funds from the U.S. Department of Transportation.
6. Serves as the budgetary document for carrying out the Systems Planning functions of the Massachusetts Action Plan.

It should be noted that the Unified Transportation Work Programs developed and adopted in each of the Commonwealth's thirteen planning regions are considered to be integral parts of the BTP&D's overall program.

A description of the regional transportation planning process is contained under Regional and Urban Transportation Planning (8-0).

Procedures Used to Develop the 1977 HPR-PL Work Program

The supervisors responsible for the individual study elements during 1976 reviewed the objectives, the procedures, the products, the participants, the cost, the schedule, and the need for the work program elements. On the basis of the comments prepared by the reviewers, the 1977 HPR Work Program was developed and the BTP&D 1976-1980 Five-Year Work Program will be updated to 1978-1982. The 1977 HPR Work Program was then submitted for A-95 and FHWA reviews. On the basis of comments received, the draft version was modified for submittal to the FHWA.

A complete description of the 1977 Work Program elements would include task sheets from the BTP&D Five-Year Work Program which describe in detail the work to be done under each HPR study element. However, in order to conserve paper, those task sheets are omitted. Both the one-year and five-year documents will continue to be revised as various tasks are implemented. Each must be viewed as a dynamic document, subject to change by the BTP&D as necessary to reflect progress and experience.

The implementation of any work program is dependent upon the availability of an adequate number of trained personnel to perform various functions; it is also dependent upon the availability of necessary equipment. The implementation of this work program depends heavily upon these key factors. Various assumptions have been made in this regard which are expected to be relatively accurate. The forecasts of available manpower in earlier HPR programs often proved too optimistic. Therefore, the 1977 HPR program reflects what are considered realistic estimates of personnel resources.

The budget, as submitted, represents an initial judgement of the most effective distribution of available monies. Based on past experience, it may be necessary to occasionally redistribute funds among certain study items. The Budget Summary Table provides a complete comparison of proposed funding levels with those of the previous year.

In addition to the HPR funds, PL funds (sometimes referred to as Section 112 funds) are assigned only to the nine regions which contain urbanized areas in accordance with the 1973 Federal-Aid Highway Act. The basis of distribution of PL funds is \$.40/capita for the first 100,000 population of the total region (based on the 1970 Census), and the remaining PL funds are prorated on the basis of remaining regional population over 100,000.

As noted, it may be necessary to reallocate funds from one element of the work program to another, if priorities change during the course of the year.

Functions of the Bureau of Transportation Planning and Development

The Bureau of Transportation Planning and Development, Massachusetts Department of Public Works, was established in 1964 under Section 3A of Chapter 16 of the General Laws. The executive and administrative head of the Bureau is the Director of Transportation Planning and Development.

The Bureau serves as the principal source of transportation planning in the Commonwealth and conducts research, surveys, demon-

stration projects, and studies in cooperation with the Federal Government, other public agencies, especially Regional Planning Agencies, private organizations, and is responsible for the continual preparation of comprehensive and coordinated transportation plans and programs. The statute requires that multi-modal transportation plans be consistent with comprehensive development plans. In addition, the Bureau maintains a bank of available transportation statistics and other data for use by other agencies in the Commonwealth. Figure 1 illustrates the relationship of the BTP&D to the units within the Department of Public Works. Figure 2 shows the internal organization of the BTP&D.

Overall Goals of the BTP&D

In accordance with the legislative mandate given to the BTP&D by the state legislature in 1964, the overall goal of the BTP&D is to serve as the "... principal source of transportation planning in the Commonwealth." It is the intent of the Bureau to provide the data and information necessary to identify and analyze transportation opportunities, problems and issues in the context of comprehensive growth and development policies and plans; to develop alternative solutions; to evaluate the impacts of all alternatives on an inter-disciplinary basis; and to recommend plans, priorities, and programs to those responsible by law for making final transportation decisions. In this way, transportation decisions will benefit from a better knowledge of the impacts of such decisions on the transportation system as well as on the other elements of comprehensive state, regional and local plans and programs.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
STANDARD OPERATING PROCEDURES

S.O.P. No.

ADM-01-00-1-000

PAGE 1 OF 1

SUBJECT
MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS - ORGANIZATION CHART

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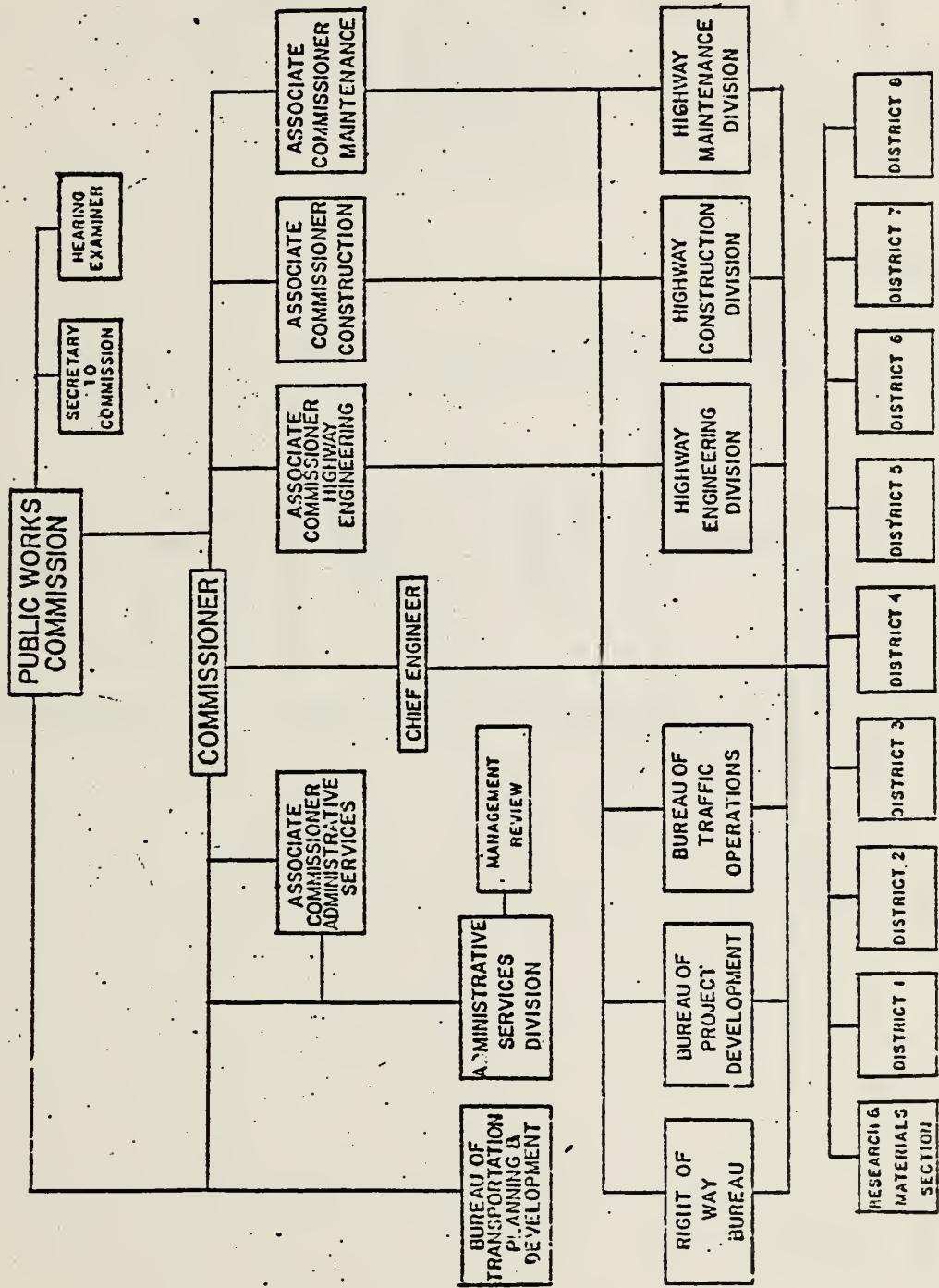
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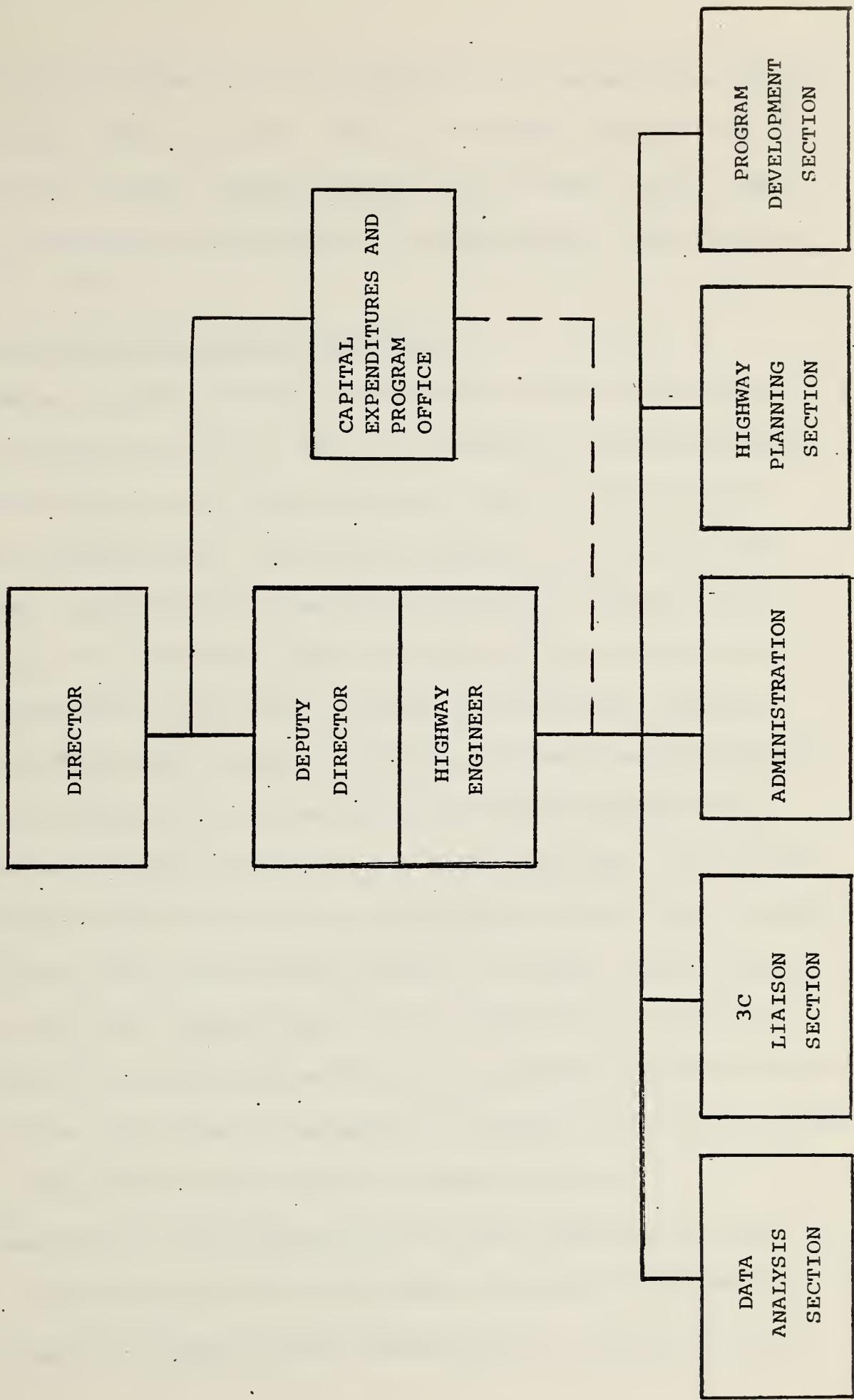
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MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS



BUREAU OF TRANSPORTATION PLANNING AND DEVELOPMENT



The work carried out by the BTP&D will be accomplished cooperatively with local, regional, State, and Federal agencies and with citizens and special interest groups in the spirit of the comprehensive, cooperative, continuing (3C) transportation planning process.

Major 1976 BTP&D Goals and Achievements

The major goals of 1976 involved the continued training of BTP&D, RPA and DPW District planning personnel, the improvement of technical planning tools and procedures, and the development of relevant planning data, analyses and reports that are necessary in making transportation investment decisions. The 1976 goals were part of a continuing update of detailed overall BTP&D goals first enunciated in the 1973 (calendar year) HPR Work Program. Gradually, the BTP&D's goals of achieving overall technical excellence in carrying out a statewide and regional transportation planning and programming process are being realized. This is being accomplished in an open and participatory manner, with increasing reliance upon the technical staffs of regional planning agencies to carry out detailed analysis of transportation issues.

The 1976 accomplishments of various elements contained in this Work Program are listed in subsequent sections. The major achievements of the BTP&D during 1976 are summarized below:

1. Resolution of the Metropolitan Planning Organization Issue (8-0)

Federal Regulations posed serious problems for Massachusetts in designating a state-regional transportation planning management

structure which would both continue the effective relationships developed in recent years and conform to Federal requirements. After lengthy negotiations during 1976, a partnership arrangement was accepted by all parties which includes the Executive Office of Transportation and Construction, the Department of Public Works, Regional Planning Agencies and Regional Transit Authorities (where applicable) acting in concert as the state's Metropolitan Planning Organizations.

2. Sub-Signatory Committees (8-0)

Regular working meetings of the Sub-Signatory Committee members were established statewide in accordance with the MPO procedures and relationships.

3. Transportation Improvement Programs (7-3 8-0)

In accordance with new Federal regulations, multi-modal Transportation Improvement Programs (TIP's) were developed and endorsed by all MPO's in each planning region. The TIP includes projects in an annual element, projects to be programmed for federal funding during the first 12 months, and long-range elements covering a 3 to 5 year period. The development of the TIP's was expedited by the preliminary sets of highway and transit priorities and the Project Information System established in 1975 as first steps toward the development of the Commonwealth's statewide multi-modal Comprehensive Transportation Plan (7-7).

4. Transportation Systems Management Element (7-3 8-0)

Another new Federal requirement called for the develop-

ment of a Transportation Systems Management element for urbanized areas which annually describes low-capital short-term transportation operation improvement strategies. Again, previous plan and program development activities made it possible to fulfill this obligation by providing important inputs from TOPICS, car-pooling, transit development programs and other related programs and analyses.

5. Statewide Program of Projects

(7-3)

In accordance with Federal Planning and Programming guidelines, a Statewide Program of Projects was produced providing a detailed listing and description of all projects at all stages of development. The statewide program of projects is based upon the Annual Element of each TIP, as endorsed by the MPO's in each region.

6. Development of Regional Transportation Plans

(8-0)

Incorporating the various elements of the documentation required by new Federal regulations and the products of an effective State-Regional 3C process, it was possible to develop the first set of realistic regional transportation plans during 1976. Since this was done by RPA's, the plans incorporated Local Growth Policy Statements, 208 planning products and HUD planning products.

7. New 3C Unified Work Programs and Contracts

(8-0)

A major accomplishment was the revision and simplification of regional unified work programs and contracts defining tasks, responsibilities and contractual relationships. The changes in both sets of documents represents a de-emphasis of supportive

paper work, thereby increasing resources for substantive planning activities.

8. Implementation of Regional Planning Studies (8-0)

In the Berkshire and Montachusett regions, comprehensive Regional Planning Studies were initiated, which will serve as models for developing future regional plans. The procedures, which were developed jointly with the Office of State Planning and the two RPA's utilize multi-disciplinary, inter-agency planning activities which will produce transportation plans as elements of comprehensive plans. Resulting transportation proposals so developed are supportive of comprehensive growth and development goals and objectives established in HUD 701, EPA 208, EDA, Chapter 807 and other programs as well as in the 3C process.

9. Highway Systems Realignment (7-1)

A major accomplishment in 1976 was the realignment of all Federal-Aid Systems to a highway functional classification basis, as required by the 1973 Federal-Aid Highway Act. Highway Functional Classification is the process by which roads and streets are grouped as components of an integrated highway network in accordance with the type of service they are intended to provide.

The realignment required a cooperative effort between BTP&D and each city and town in the Commonwealth, and involved the establishment of Federal-Aid urban boundaries and the preparation of various maps.

As a result of this effort, the system service levels now conform to the Federal-Aid funding categories.

10. Increased Regional Transportation Planning Activities (8-0)

The effective decentralization of transportation planning activities from BTP&D to Regional Planning Agencies (RPA's) requires substantive technical abilities and product output by the RPA's.

Project products include:

- o Regional Planning Studies and Corridor Planning Studies under way in various regions.
- o Data analysis and forecasting capabilities developed in the various regions through creation of models, networks and processing programs.
- o Transportation plans and programs being developed in all regions for: the elimination of inactive projects from the Department "pipeline", priority setting for all active projects, and a realistic blueprint of regional short- and long-range transportation objectives.

11. Technical Guidelines (7-5)

Technical guidelines were developed for the preparation of Regional Planning Studies and Corridor Planning Studies.

12. Educational Achievements (11-14)

To help improve the capabilities of the BTP&D Staff to undertake the growing range of concerns and responsibilities in transportation planning, and to assist the Regional Planning Agencies in training their staffs, we have sponsored and/or participated in a number of courses, seminars, conferences, etc. These include:

COURSES

U.S. Dot, Basic Technique in Urban Transportation Planning

U.S. DOT, Advanced Techniques in Urban Transportation Planning

Highway Engineering Economics

Highway Statistics as a Planning Tool

State Employee Training Program:

Basic Supervisory Management

Employee Performance Evaluation

FHWA Fellowships

Tufts University, Graduate Study in Civil Engineering

Boston University, Masters Program in Urban Affairs

FHWA, Short Course in Urban Transportation Planning

Seminars, Workshops, Conferences, etc.:

Transportation Research Board, 55th Annual Meeting

North Atlantic Highway Planning Officials

Monthly Informational Meeting, DPW and RPA's

Tri-State Coordinating Committee Meeting

Transportation Systems Management Conference

Transportation Research Forum Meetings

Transportation Research Forum, Annual Conference

Boston Transportation Group Meetings

Rural Highway Public Transportation Program Workshop

Interstate Cost Estimate Workshop

Regional Open Space and Recreation Workshop

Project Interlock, Bicycle Conference

Offshore Development Conference

Legal, Institutional Mechanism for Water Quality Planning
and Implementation

Regional Economic Development through New Linkages Between
Education and Work

State-Local Fiscal Relations Conference

13. Rural Highway Public Transportation Projects (8-2A, 8-11A)

Public Transportation Programs were jointly developed with the Franklin County and Cape Cod regions for the initiation of public transportation service. These demonstration programs provide for the purchase of buses and equipment and public transportation service for a two year period.

14. Bikeways (7-6)

Planning was completed and implementation initiated on a statewide group of Bikeway projects developed in the 3C process and funded from transportation bond issue and local sources. Planning for the second generation of projects was initiated and five Urban Bikeway demonstration project proposals were developed and submitted to the FHWA. To date, the Chicopee-West Springfield project has received FHWA approval.

15. Project Information System (7-3)

The system has been expanded and refined and includes data on all active Department projects throughout the state. It can aggregate project data on a regional basis to provide essential information for RPA and district use to establish priorities and develop transportation plans and programs.

16. National Highway Inventory and Performance Study (7-2)

This study was started, and Section 1 (statistics) was filed in accordance with FHWA requirements.

17. A-95/TIP Coordination (8-0)

Procedures were drafted to provide the necessary coordination between A-95 project reviews and the development of Transportation Improvement Programs.

18. Air Quality Memorandum of Understanding (7-5)

A Memorandum of Understanding was developed between the Departments of Public Works and Environmental Quality Engineering to govern air quality planning and implementation relationships and procedures.

19. Corridor Planning Studies (CPS's) (8-0, 7-5)

Guidelines were developed for the preparation of CPS's. The CPS's for Tri-Town, Route 114 and Route 228 were completed. CPS's for Route 3 and Route I-495 were initiated, making a total of eighteen (18) currently under way, of which eight (8) are in the study design stage.

20. Statistical Reporting (2-0, 4-0, 5-0)

Procedures were improved for the compilation of statistics required by the FHWA.

21. Transportation Planning Status Report (6-4, 7-7)

The 1975 Status Report was updated to reflect many of the accomplishments listed above, and to serve as the basis for an

effort to develop a statewide multi-modal Interim Comprehensive Transportation Plan during 1977.

22. New Highway Maps (3-1)

New map series completed and available include:

- o General Highway Regional Series, 1" = 2000'
- o General Highway Regional Series, 1" = 5280'
- o Separate maps for each Federal-Aid Urban Area, 1" = 1000'
- o Regional maps, 1" = 5280'
- o Statewide map, 1" = 3 miles
- o Route 128 and Vicinity: special purpose map.
- o Index and key map

23. Other Accomplishments include:

- o Completion of the Highway Inventory Computerization
- o BTP&D transfer to new offices
- o Initiation of 208 coordination

Major 1977 BTP&D Goals

The overall 1977 BTP&D objectives, which have shaped the 1977 HPR Work Program elements, are:

1. Development of a statewide multi-modal Interim Comprehensive Transportation Plan.

All of the necessary planning activities to achieve this objective were underway during 1976. Primary among these is the "3C" transportation planning process conducted by the RPA's. A description is included under Project 7-7.

2. Determination of Statewide Highway Needs

This objective will be achieved by utilizing the National Highway Inventory and Performance Study and available products and processes, and will provide an appraisal of structural, safety and service performance on the realigned Federal-Aid Primary and Secondary Systems, under Project 7-2.

3. Development of Regional Computer Models and Networks

The objective is to make each RPA self-sufficient in developing and running regional transportation models and networks. Considerable data, training and technical assistance is being provided to the RPA's by BTP&D personnel and consultant efforts under Projects 8-14 and 8-15.

4. Development of a Statewide Computer Model and Network

BTP&D staff development of a statewide model and network will proceed. A working model and network is anticipated for all functionally classified links, with considerable progress in network processing programs and statewide zone definition, under Project 7-4.

5. Development and refinement of BTP&D Guidelines

Existing CPS and RPS guidelines will be refined and additional technical and administrative guidelines will be developed under Project 7-5.

6. Update BTP&D 5-Year Work Program

The original BTP&D 5-Year Work Program was developed for the years 1974 through 1978, and was intended to provide the

framework for RPA work programs during that period. Most of the objectives described in the original document and its subsequent 1975-1976 updating will have been achieved by the end of 1977. A new BTP&D 5-Year Work Program will be developed during 1977 under Project 1-1, and will define objectives for the years 1978 through 1982.

1-0 ADMINISTRATION

1-1 Planning Administration

Staff Responsibility

Director, T. F. Humphrey

Planning Engineer, G. E. Lybrand

Project Objective

The objective is to administer the Planning portion of the 1977 HPR Work Program, including all costs for rent, utilities, and administrative, secretarial and clerical personnel. These expenditures cannot be charged directly to specific projects in the Work Program without unreasonable cost accounting.

In addition, the development of transportation planning training programs, liaison activities with national transportation groups, and other miscellaneous activities formerly conducted under Project 11-14, will now be provided as part of this project.

1977 Objectives

The administration, training and other activities outlined above will be continued.

The original BTP&D 5-Year Work Program was updated to include the planning objectives from 1976 to 1980, but most of those objectives will be achieved by the end of 1977. A major goal will be the preparation of a new BTP&D 5-Year Work Program to define BTP&D objectives for the years 1978 through 1982.

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx. Expen.	1977 Est. State/PE
a) Force Account	201,000	250,000	250,000
b) Contract	0	0	0
TOTAL	201,000	250,000	250,000

2-0 DATA COLLECTION SERVICES

2-1 Rural and Urban Road Inventory

Staff Responsibility

Inventory and Statistics Unit: Supervisor, J. O'Halloran

Manager, P. Hughes

Project Objectives:

The objective is the formation and maintenance of the comprehensive data base necessary for realistic short- and long-range transportation planning through the collection, refinement, assembly and coordination of all available data associated with highways and highway-related facilities. A current, detailed road inventory is required for both the proper assessment of present needs and the reliable forecasting of future needs to insure the orderly development of highway systems policies and programs. Other uses include highway mileage analyses, statistical reporting, state-aid, safety and maintenance programs, cost estimating, highway functional classification, Federal-aid systems revisions, mapping, highway bridge studies and railroad, bus and airport studies. .

To ensure data is kept current, contact is maintained with each of the 351 cities and towns of the Commonwealth through the eight (8) District Planning Engineers, and an annual Road Inventory update is provided. In addition, other sections of the Department provide data, as well as railroad carriers, the Association of American Railroads (AAR), the FHWA and others.

The major product is a series of computer printouts showing origin, destination, length, system identifiers, and pertinent geometrics for the approximate 33,000 miles of road open to public travel in the Commonwealth.

Additional printouts show geometrics for all highway bridges, also the physical condition of all highway/railroad grade crossings, and pertinent data for all railroad crossings.

Highway statistics required annually by the FHWA are produced, as are local road mileage statistics for use in the allocation of state aid to local communities.

1976 Accomplishments

Accomplishments for the year include:

- o Updated printouts for each community in the Commonwealth with a detailed description of each road therein.
- o Annual update of Road Mileage Statistics.
- o Special purpose maps showing the statewide rail system, revised Federal Aid System, State Highway System and Road Inventory Record are now 75% completed.
- o A listing, by regional planning area, of all commercial bus routes.
- o The updated BTP&D Bridge Record was completed.
- o The Road Inventory was revised to reflect the newly realigned Federal-Aid Highway System
- o Approximately fourteen hundred requests for information were serviced, an indication of increased public and private awareness of the availability and usefulness of Road Inventory data.

1977 Objectives

The project objectives and services outlined above will be continued. In addition:

- o The Community Road Inventory data will be updated and new printouts provided.
- o Improved data coding will store annual roadway changes for resurfacing, widening, sidewalk additions etc., and will allow data retrieval under the various categories.

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	HPR
a) Force Account	164,000	125,000 (1)	168,000
b) Contract	0	0	0
Total	<u>164,000</u>	<u>125,000</u>	<u>168,000</u>

(1) Reduction caused by temporary personnel transfers to other HPR projects.

2-3 Defense Routes Bridge Record

Staff Responsibility

Inventory and Statistics Unit: Supervisor, J. O'Halloran

Manager, E. Seed

Project Objective

The objective is to provide the Department of Defense and other agencies with geometrics and structural capacity data for bridge facilities throughout the Commonwealth. This information is necessary for the safe routing of oversize or overweight vehicles, and for the movement of freight and equipment in an emergency.

1976 Accomplishments

The Highway Bridge Defense Record was updated from 1972 to 1975, and computerized. The first printout is now being edited.

1977 Objectives

The Highway Bridge Defense Record, updated through 1975, will be published in early 1977.

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	HPR
a) Force Account	5000	0 (1)	2000
b) Contract	0	0	0
Total	5000	0	2000

(1) Costs for this project are included under Project 4-1

3-0 INFORMATION SERVICES

3-1 Mapping Services

Staff Responsibility

Mapping Unit: Supervisor, J. O'Halloran
Manager, G. Jenness

Project Objective

The objective of this ongoing task is to provide maps showing natural and man-made features for use in transportation related activities by both the public and private sectors. Included are the land-use and urban, rural and regional transportation maps necessary for the comprehensive urban and regional planning process.

1976 Accomplishments

- o Completion of the Lockwood, Kessler and Bartlett contract managed by G. Lybrand represents a significant BTP&D accomplishment. A total of nearly twenty-five thousand (25,000) mylars and prints were received under this contract in the following categories:

General Highway Regional Series, 1"=2000'

(1 set provided to each DPW District Office and RPA)

General Highway Regional Series, 1"=5280'

Separate map or maps for each Federal-Aid Urban Area, 1"=1000'

A map for each of the State's thirteen (13) planning regions,

1"=1 mile

A Statewide map, 1"=3 miles

A Special Purpose Map: inside Route 128 and vicinity

An Index and Key Map

A Statewide map-oriented photo index

Two (2) mylars and fifty (50) prints of each of the above listed maps were stored by BTP&D for future use.

- o In addition, this unit produced base maps for more than fifty (50) separate applications for FHWA urban-systems route approvals.
- o Numerous requests were answered during the year for various maps available from BTP&D including the McConnell Series of land-use maps, and the 1000 scale air-photo enlargements.

1977 Objectives

A major objective is to disseminate information to both the public and private sectors concerning the wide range of maps and aerial photographs now available through BTP&D.

To provide more efficient service for map requests, storage facilities for all maps and related materials will be consolidated at the BTP&D Office.

To satisfy the large number of requests for the offset-printed county series maps (now outdated), a contract will be let to offset-print the new 1"-1 mile Regional Series maps.

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	HPR
a) Force Account	40,000	40,000	45,000
b) Contract	<u>140,000</u>	<u>210,000</u> (1)	<u>3,000</u> (2)
TOTAL	180,000	250,000	48,000

(1) Increase due to additional products requested from consultant.

(2) Estimated Contract cost for offset-printed 1"-1 mile Regional Series Maps.

3-3 Information Systems Development

Staff Responsibility

Data Services Unit: Supervisor, E. Collagan

Manager, W. Harward

Project Objective

The objective is to develop the data base and information systems required for comprehensive transportation planning activities, and to provide related technical assistance to other BTP&D units and outside agencies.

The U.S. Census now provides the major source of data for this project, although the census data must be converted to meet the existing BTP&D format, which is geared to traditional survey inputs. Differences exist in definitions, data collection, levels of accuracy, area coverage, etc.

Additional data relating to land use, socio-economic and environmental elements, and trip modes for taxis, trucks, etc., is also utilized.

1976 Accomplishments

This unit provided technical assistance, and coordinated data collection and information systems development with other agencies, including the RPA's. Technical assistance included participation in the Land Records Commission activities and assistance in its report and recommendations.

In addition,

- o The GBF/DIME system (1) was improved for the Standard Metropolitan Statistical Areas (SMSA's).
- o The Census journey-to-work file was converted from SMSA to a regional basis.
- o Statewide trip tables were updated.
- o Trip data was developed for use in statewide Chapter 807 (Growth Policy Development) activities.
- o GBF/DIME related census tracts were further refined.

1977 Objectives

The data collection, information systems development, technical assistance and related activities outlined above will be continued.

The Census tract system will be updated, expanded and coordinated with basic analysis and traffic zones, and liaison with RPA's and SMSA census tract committees will be maintained.

Census data output on employment, work trips, etc., will be expanded.

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx. Expen.	1977 Est. State
a) Force Account	40,000	40,000	40,000
b) Contract	0	0	0
TOTAL	40,000	40,000	40,000

(1) GBF/DIME is a system to assign locatable data to arbitrary geographical areas for the purpose of determining the area characteristics for any category of data.

3-4 Transportation Reference Library

Staff Responsibility:

Acting Librarian: J. Edwards

Project Objective

The objective is to maintain, improve and expand the Transportation Reference Library, as the number of publications received continues to increase along with the requests for library services.

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx. Expen.	1976 Est. State
a) Force Account	30,000	24,000 (1)	15,000 (1)
b) Contract	0	0	0
TOTAL	30,000	24,000	15,000

(1) Due to reduction in staff

4-0 TRAFFIC VOLUME ACTIVITIES

4-1 Traffic Volume Counting

Staff Responsibility

Traffic Counting Unit: Supervisor: J. O'Halloran

Manager: A. Batchelder

Project Objective

The objective is to obtain accurate traffic volume data at minimal cost as a quantitative measure of highway usage. Information derived from this activity has numerous uses in both the public and private sectors.

Traffic volume data is a basic planning tool, essential for identifying current needs, and forecasting future needs for the planning, design and maintenance of transportation facilities. It provides an indication of growth trends and aids in the functional classification of highways.

1976 Accomplishments

Statewide field operations include:

o Traffic volume counts as follows:

Twenty-four (24) permanent stations operated by Wellesley personnel with weekly inspection assistance from district crews;

One hundred (100) control stations operated by the district crews with assistance from Wellesley personnel;

Twelve hundred (1200) coverage stations (48 hour) by district personnel;

approximately one thousand (1000) special counts by Wellesley personnel per request of various DPW sections and other agencies.

- ADT counts for the annual update for all sections of the FHWA Interstate System Traveled Way Traffic Map.
- Eleven-hour vehicle classification counts at ten (10) locations to update truck factors for the 1977 Interstate Cost Estimate.
- Turning Movement Studies at six (6) Boston locations
- Assistance for a SRPEDD Origin and Destination Study of the Attleboro area.
- Eight (8) sensor loop installations made at the request of the Maintenance Section to provide traffic counts for the Salt Test. A summary and analysis of the results was prepared and submitted to that section.
- Eight (8) sensor loop installations made as part of Interstate safety contracts.
- Twenty-one (21) sensor loop installations made at various locations.
- Twelve (12) MR type tube counters were converted to count with either tube or loop.

In addition,

- The 1975 Traffic Volume Report is complete and ready for printing.
- Input in the form of data and special counts was provided to Corridor Planning Studies conducted by various RPA's.

- o Permanent station data was computerized and transmitted to the FHWA monthly; Control Station data was processed bi-monthly; Coverage and Speical counts were processed when received.

1977 Objectives

- o Field operations with permanent, control and coverage stations and special counts will continue.
- o Traffic volume reports for 1975 and 1976 will be published.
- o Traffic Flow Maps for 1975 and 1976 will be produced.
- o Short counts obtained from the 1975 Traffic Counting Program will be expanded to Average Daily Traffic adjusted for seasonal factors.
- o Servicing present traffic data requests required replacement of the following outmoded equipment:

a)	a tape-to-card translator	\$15,000
b)	twenty (20) traffic recorders	\$20,000

<u>Costs (\$)</u>	1976 Est. HPR	1976 (1) Approx. Expen.	1977 Est. HPR	1977 Est. State/PE	1977 Est. Total
a) Force Account Equipment	420,000 0	515,000 0	255,000 35,000	228,000 0	483,000 35,000
b) Contract	0	0	0	0	0
Total	420,000	515,000	290,000	228,000	518,000

(1) includes charges to PE funds

4-3 Vehicle Weight Study

Staff Responsibility

Traffic Counting Unit: Supervisor, J. O'Halloran

Manager, D. Massucco

Project Objectives

The Vehicle Weight Study provides the basis for estimating annual travel by each type of truck, the ton-miles of cargo hauled and a comparison of the characteristics of current highway usage with administrative policies. The results are used at the State, regional and national level in the allocation of highway costs and revenue, in the consideration of transportation policy including size and weight regulations, geometric design criteria, pavement design, and for a variety of special studies. The continuity of the data and trend information since 1963 provides a reliable indicator of changing patterns in highway transportation compared to rail and other modes, and a measure of the effects of transportation policies, regulations, economic activity and technological advances.

1976 Accomplishments

No Vehicle Weight and Characteristics Study was conducted during fiscal 1976 as a result of a new bi-annual schedule agreed upon by the FHWA. Staffing problems resulting from budget constraints necessitated the revised schedule.

1977 Objective

The 1977 study will be conducted at the following four (4) locations, selected to provide the statewide geographic coverage

and schedule continuity required for both DPW and FHWA needs:

North Adams (Route 8), Longmeadow (Route I-91), West Bridgewater (Route 24) and Swansea (Route I-95).

1977 Anticipated Products

This study will provide a variety of information including:

- o Station data including environment, scale type, personnel, roadway and pavement characteristics.
- o Vehicle type (passenger cars, buses and trucks) in various classifications.
- o Weights and loads by vehicle type
- o Axle loads and equivalent axle loads for various vehicle classifications
- o Number of loaded and empty trucks in 1977 compared to other years.
- o Listing of axle loads and axle spacings for various classifications of trucks.
- o Comparison of Mass. Law and AASHTO vehicle recommendations with actual Mass. usage.

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen:	State/PE
a) Force Account	0	0	20,000
b) Contract	0	0	0
TOTAL	0	0	20,000

4-7 Traffic Analysis and Forecasting

Staff Responsibility

Travel Data Unit: Supervisor, E. Collagan

Manager, J. D'Angelo

Project Objective

Traffic analysis and forecasting are essential elements in the transportation planning process at the state, regional and local levels. The objective of this task is to provide the means for forecasting future traffic volumes for state and regional systems, specific corridors or segments of corridors. Outputs from this process are utilized to resolve transportation issues, evaluate alternatives and determine design needs.

1976 Accomplishments

During 1976, the Travel Data Unit made numerous traffic assignments for proposed highway improvements and developed "no build" assignments for existing routes, as required by various Environmental Impact Statements. Work involved the investigation and detailed evaluation of many highway planning components, including the development of specific traffic forecasts for thirty-five projects being designed by the Department, and eight consultant-designed projects.

Data and guidance on traffic forecast development was supplied to the CTPS for projects within the Boston Metropolitan Area and to various RPA's for corridor planning studies.

In addition, FHWA requested and received traffic data for the 13 Interstate Routes to be included in the 1977 Interstate Cost Estimate Report.

1977 Objectives

The major work effort will consist of analyzing and developing traffic forecasts for proposed highway improvements, and the development of "no build" assignments for specific highway segments. This unit will continue to provide data and technical assistance to the RPA's and other agencies.

<u>Costs (\$)</u>	1976 Est. HPR(1)	1976 Approx. Expen.(1)	1977 Est. State/PE
a) Force Account	33,000	40,000	58,000
b) Contract	0	0	0
TOTAL	<u>33,000</u>	<u>40,000</u>	<u>58,000</u>

(1) 1976 Costs do not reflect charges to PE, which are included for the 1977 estimate.

5-0 TRANSPORTATION STATISTICS

5-1 Motor Vehicle Statistics

Staff Responsibility

Travel Data Unit: Supervisor, E. Collagan

Manager, J. D'Angelo

Project Objective

Basic statistical information on motor-vehicle registrations, motor-fuel consumption and highway-user tax revenues collected at the State level is essential for effective highway planning and administration. In addition to meeting FHWA requirements, the objective is to collect this data for use in studies of short and long-term highway needs, with the subsequent formulation of transportation programs to meet those needs.

1976 Accomplishments

A file was maintained of all source documents, and copies of all past and current PR reports on transportation statistics.

The following reports were prepared and submitted to the FHWA:

- o PR-556: State Motor Fuel Tax
- o PR-571: State Taxes on Vehicles for Hire
- o PR-551: Motor Fuel Consumption
- o PR-561: State Motor Vehicle Registrations
- o PR-562: State Operator's Licenses
- o PR-566: State Motor Vehicle Registrations
- o PR-576: State Motor Carrier Taxes

1977 Objectives

This unit will service data requests, and update the motor vehicle statistics and Federal PR reports outlined above.

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx. Expen.	1977 Est. State/PE
a) Force Account	15,000	12,000	15,000
b) Contract	0	0	0
TOTAL	<u>15,000</u>	<u>12,000</u>	<u>15,000</u>

7-0 STATEWIDE TRANSPORTATION SYSTEMS PLANNING AND PROGRAMMING

7-1 Highway Functional Classification

Staff Responsibility

Classification and Needs Unit: Supervisor, J. O'Halloran

Manager, K. Wilman

Project Objectives

Highway functional classification is the process by which roads and streets are grouped as components of an integrated highway network in accordance with the type of service they are intended to provide.

Functional Classification is a dynamic process that responds to land use changes and motorists habits, and therefore requires constant review and updating.

1976 Accomplishments

The 1973 Federal-Aid Highway Act required each state to realign its entire Federal-aid system by highway functional classification by July 1, 1976, thereby creating a new basis for Federal-Aid funding for highway projects. This enormous task was completed with the exception of a few highway segments in communities that did not respond to repeated requests for cooperation.

This project required numerous meetings, correspondence and telephone conversation with local and regional officials throughout the state.

Federal-aid urban boundaries were revised upon request by various communities, since the boundaries affect functional classification and Federal-aid funding.

A series of highway functional classification maps was prepared that show the Federal-Aid Primary, Secondary and Urban System on a statewide, regional and local basis along with descriptive logs of each highway route.

Associated tasks include:

- o Compilation of state highway statistics including the following totals:

F.A. Primary System	-- 1,115 miles
Urban Extension System	-- 1,084 "
F.A. Secondary System	-- 2,122 "
Urban Systems	-- 5,600 "
Communities eligible for Urban System funding	-- 206
Communities approved for U.S. funding through December 1976	-- 194

- o Completion of the Urban System Study for Federal-Aid Urbanized Areas
- o Completion of the Traffic Analysis (TA-1) table which lists highways by Federal-Aid and other administrative categories.

1977 Objective

The objective is to maintain and update all the component parts of Highway Functional Classification including urban boundaries, various map series and route logs.

A new map will show Federal-Aid Urban boundaries and urban population groupings.

This unit will continue to service requests for data and technical assistance from local, regional and state agencies.

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	HPR
a) Force Account	70,000	86,000 (1)	32,000
b) Contract	0	0	0
TOTAL	70,000	86,000	32,000

(1) Increased personnel costs associated with the realignment of the Federal-Aid Highway System as required by the 1973 Federal Aid Highway Act.

7-2 Highway Needs Identification

Staff Responsibility

Classification and Needs Unit: Supervisor, J. O'Halloran

Manager, K. Wilman

Project Objective

The continued comparison of the physical characteristics and use of a highway system with appropriate design and capacity criteria is essential to the development of a sound highway improvement and capital expenditure program.

The project objective is to develop improved techniques for identifying highway system needs as a means of:

- o Determining project priorities.
- o Establishing transportation improvement programs.
- o Meeting the FHWA's "Guide for Mileage Facilities Reporting" and other statistical requirements.

The Highway Needs Identification work effort will provide a sufficiency-related listing of highway segments based on condition, safety and service standards, and will include a selected percentage of functionally classified highways throughout the Commonwealth.

1976 Accomplishments

Because of staffing cutbacks, personnel normally assigned to this project assisted in the required Federal-Aid System realignment completed under Highway Functional Classification (HPR Prog. 7-1). Only a few small statistical studies requested by the FHWA

were completed under this project.

1977 Objectives

The major objective of this unit will be to continue the program outlined above and to include coverage of national studies and the realigned Federal-Aid System for the identification of highway needs, in conjunction with comprehensive land use and growth and development policies.

Anticipated products include:

- o Total coverage of the FAP and FAS Rural Area System.
- o Total coverage of Urban Area freeways and expressways.
- o 50% coverage of Principal Arterials.
- o 25% coverage of Urban Minor Arterials.
- o 10% coverage of Urban Collectors

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	HPR
a) Force Account	22,000	10,000 (1)	60,000
b) Contract	0	0	0
TOTAL	<u>22,000</u>	<u>10,000</u>	<u>60,000</u>

(1) Classification and Needs Unit personnel were engaged in tasks related to Program 7-1 during most of 1976. Major emphasis for 1977 will be on Highway Needs Identification.

7-3 Fiscal Planning and Programming - Highways

Staff Responsibility (1)

Capital Expenditure and Program Office (CEPO),

Director: G. Joseph

Administrator: T. Richardson

Program Objective

The objective is to provide the fiscal planning and programming activities formerly conducted by the BTP&D Fiscal Planning Section and the Highway Engineering Division's Federal-Aid Section, now combined as CEPO.

Federal-Aid activities include processing all submissions and related correspondence for FHWA program and project approvals. This unit maintains control records for all Federal funds and prepares charts, graphs, etc., to indicate changes in funding levels for the various Federal-Aid categories. A complete set of FHWA publications pertaining to highways is kept up-to-date to aid Department compliance with Federal requirements.

CEPO establishes cost accounts for the fiscal control of all Department activities, and maintains a project file and schedules the required legal notices for each project advertised for construction.

The computer-based statewide Project Information System developed and maintained by this unit contains data on all active Department projects. The system can aggregate projects by region or other categories, to provide RPA's and District Offices with

data on all local projects essential to the development of regional transportation plans and priorities.

1976 Accomplishments

All the Federal-Aid and fiscal planning and programming activities outlined above were provided throughout 1976.

Regional Project Information System printouts were provided to all RPA's and District Offices, as well as supervision and assistance for the establishment of statewide and regional priorities for all active projects, and the preparation of the regional transportation plans required by the FHWA.

A Project Schedule Report was instituted that provides a listing by estimated completion date for the more than one thousand projects listed in the Project Information System.

1977 Objectives

CEPO will continue to provide the fiscal planning and programming services previously outlined, and will expand the usefulness of the Project Information System.

Anticipated products include development of:

- o A short- and long-range Highway Project Priority Program.
- o The annual Statewide Program of Projects required by the FHWA, which will show each project by funding category for which the Department wishes to receive FHWA approval.

Costs (\$) (2)

	1976 Est. HPR	1976 Approx. Expen.	1977 Est. State/PE
a) Force Account	95,000	75,000	140,000
b) Contract	0	0	0
TOTAL	<u>95,000</u>	<u>75,000</u>	<u>140,000</u>

(1) Staff responsibility for the gathering of certain statistical data related to motor vehicles formerly conducted by the Fiscal Planning and Programming Section has now been transferred to the Travel Data Unit.

(2) 1976 Costs include the Fiscal Planning and Programming Section only; 1977 Estimate is for the entire CEPO.

7-4 Transportation Modelling and Planning Applications

Staff Responsibility

Systems Development Unit: Supervisor, T. Collagan

Manager, C. Young

Project Objective

The objective is to accumulate and process applicable transportation data from various sources, to develop a statewide transportation model and network utilizing that data, and to refine and implement other computer applications essential to statewide comprehensive transportation planning activities.

1976 Accomplishments

Technical assistance, analyses and data services have been supplied to various units of the Department and to outside agencies.

Various consultant techniques have been reviewed for possible implementation.

Coding for the statewide network has been completed in twelve counties, with network logic debugging completed in three counties.

1977 Objectives

The technical assistance, analyses and data services outlined above will continue to be provided.

Initial coding and editing the 1975 base network for all counties will be completed, and the network edit for ten counties

will be completed.

Network processing software will be prepared.

RPA data will be aggregated into statewide zones.

Development will begin for statewide modelling procedures.

Anticipated products include:

- o A statewide modelling network for all functionally classified links.
- o Computer programs for network processing.
- o Statewide zone definitions.
- o Data summaries and analyses as required.

Costs (\$)

	1976 Est. HPR	1976 Approx. Expen.	1977 Est. HPR
a) Force Account	175,000	160,000	190,000 (1)
b) Contract	0	0	0
TOTAL	175,000	160,000	190,000

(1) Increase is due to additional staffing required.

7-5 Highway Related Planning Activities

Staff Responsibilities

Planning Studies Unit: Supervisor, W. Kondo
Manager, T. A. Vigil

Project Objective

The objective is to establish and maintain a comprehensive, interdisciplinary approach to highway-related planning conducted via the "3C" process.

A primary tool in this effort is effective inter-agency liaison between BTP&D and the various resource management and land-use oriented state agencies, through the Office of State Planning (OSP), including A-95 reviews conducted by this unit.

Participation in the "3C" process also occurs through the development of guidelines for conducting Regional and Corridor Planning Studies (RPS's, CPS's), and the review of these and other special planning studies.

In addition, socio-economic, environmental, and land-use data and projections are obtained for use in transportation planning activities by BTP&D units, RPA's and other agencies.

1976 Accomplishments

BTP&D and OSP have informally reached agreement that RPS's will be the comprehensive planning framework for integrating all state and regional planning programs to ensure that transportation and other functional planning activities will be supportive of regional and state growth plans.

Guidelines for conducting RPS's and CPS's were developed, and a bimonthly "Status Report for Corridor and Special Planning Studies" was instituted.

Planning and management programs were developed jointly with other state agencies to ensure inter-agency monitoring of CZM, 208, rural development, 701, EPA and air quality programs, for effective integration with transportation planning activities.

This Unit continued A-95 and RPS/CPS reviews, and monitored the above mentioned programs, as well as, local and regional growth policy statements, submitted under the provisions of Chapter 807.

In addition, a short-and long-range Highway Corridor Land Use Planning Program was initiated.

1977 Objectives

All of the planning and review activities outlined above will be continued.

In addition, this Unit will:

- o Promote increased inter-agency cooperation, including "joint funding" application where feasible.
- o Participate with and assist OSP in further developing and coordinating socio-economic, land-use, environmental and recreational data and programs, and correlate them with transportation planning activities.
- o Revise the RPS and CPS guidelines.

- o Update the Highway Corridor Land Use Planning Program.

<u>Costs</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	State/PE
a) Force Account	40,000	40,000	65,000
b) Contract	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	40,000	40,000	65,000

7-6 Transportation Planning Activities for Non-Highway Modes

Staff Responsibility

Program Development Section: Supervisor, W. Kondo

Managers-Railroads, M. DiMino

Bikeways, P. Lynch

Airports, P. Lynch

Project Objective

The objective is to assist in the development of comprehensive transportation planning programs for non-highway modes, including railroads, transit, airports and bikeways, and to ensure coordination with highway planning programs.

Effective statewide transportation planning requires the comprehensive analysis and use of all transportation modes to ensure maximum utilization of available resources.

BTP&D's efforts toward development of the multi-modal aspects of transportation planning include:

- o Monitoring rapid transit activities.
- o Evaluating railroad right-of-way (RROW) uses.
- o Liaison for airport systems planning.
- o Development of a statewide Bikeways Program.

1977 Objectives

This Unit will continue the transportation planning activities for non-highway modes that are outlined above, and in addition will:

- o Expand and refine the Bikeway Program and develop new projects.
- o Evaluate DPW and non-transportation uses of RROW.
- o Participate in the transit planning program.

1977 Anticipated Products

- o Report to EOTC on RROW
- o Updated RROW file
- o Expanded Bikeways Program

<u>Costs (\$)</u>	1976	1976	1977
	Est.	Approx.	Est.
	HPR	Expen.	HPR
a) Force Account	25,000	25,000	25,000
b) Contract	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	25,000	25,000	25,000

7-7 Comprehensive Transportation Plan

Staff Responsibility

Planning Studies Section: Supervisor, W. Kondo
Manager, T. A. Vigil

Project Objective

The project objective is to develop a statewide multi-modal Comprehensive Transportation Plan (CTP) through the aggregation and refinement of current transportation planning activities and products, including:

- o An updated Transportation Planning Status Report.
- o The latest RPS's, CPS's, and other regional and state planning inputs to provide the "3C" framework for development of the CTP.
- o The State Rail Plan as updated by EOTC.
- o Airport development plans and programs prepared by MAC and Massport.
- o Annual program requests for transportation projects.
- o Highway Functional Classification System.

1976 Accomplishments

The 1975 Transportation Planning Status Report was updated with the following accomplishments:

- o The plans and programs for all active projects were updated and summarized.
- o The staff procedures developed for this updating will serve as the framework for development of the CTP.

1977 Objectives

The 1976 Transportation Status Report will be expanded, and through utilization of the other planning activities and products outlined above, an Interim Comprehensive Transportation Plan will be developed.

The Interim Comprehensive Transportation Plan (ICTP) will contain all the basic ingredients envisioned for the CTP. The refinement of the ICTP into the CTP is anticipated to require a time period in excess of one year: Preparation of the ICTP will be the immediate objective with a finalized CTP anticipated during 1978.

1977 Anticipated Product

- o 1977 Interim Comprehensive Transportation Plan

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx, Expen.	1977 Est. HPR
a) Force Account	15,000	(1)	60,000 (2)
b) Contract	0	0	0
TOTAL	15,000	0	60,000

(1) Expenditures were charged under 1976 Program 6-4,

(2) Estimate reflects increased staffing required.

8-0 Regional and Urban Transportation Planning

8-1 Berkshire	8-7 Merrimack Valley
8-2 Franklin	8-8 Metropolitan Boston
8-3 Lower Pioneer Valley	8-9 Old Colony
8-4 Montachusettts	8-10 Southeastern Mass.
8-5 Central Mass.	8-11 Cape Cod
8-6 Northern Middlesex	8-12 Martha's Vineyard
	8-13 Nantucket

Staff Responsibility

3C Liaison Section: Supervisor, G. Rourke

Project Objective

In accordance with Federal rules and regulations and established statewide policy and guidelines, to provide multi-modal regional transportation plans and programs developed by the Regional Planning Agencies (RPA's) through a comprehensive, cooperative and continuing (3C) transportation planning process involving a variety of agencies and disciplines, and consistent with the comprehensively planned development of the regions.

1976 Accomplishments

The major work efforts in the urbanized regions during 1976 were focused on the development of agreeable Memoranda of Understanding between the Executive Office of Transportation and Construction, the Massachusetts Department of Public Works, the Regional Planning Agency and the Regional Transit Authority (where applicable). This Committee of Signatories was designated

by the Governor to act as the Metropolitan Planning Organization having the responsibility for carrying out the requirements of the Joint FHWA/UMTA planning regulations of September 17, 1975.

In the Boston Region, the MPO also includes the Advisory Board of the MBTA and the Mass. Port Authority.

The MOU's not only reaffirmed the continuation of the 3C transportation planning process for each urbanized region but also set forth the functions, operations and responsibilities of the MPO and thereby enabled the development and subsequent endorsement by each MPO of a Planning Work Program, a Transportation Plan including a Transportation System Management element, and a Transportation Improvement Program for each urbanized region.

The preparation and endorsement of these required documents led to a continuation of Federal certification that there is an adequate transportation planning process ongoing in each urbanized region.

The same planning process, relationship and work activities established for the urbanized regions have been carried on for the Franklin and Cape Cod non-urbanized regions to insure the uniform statewide program coverage inherent in the State's revitalized 3C process.

Similarly, in the two remaining non-urbanized island regions of Martha's Vineyard and Nantucket, the established 3C process was in effect.

These planning efforts were generally oriented toward the development of traffic circulation systems and bike-way planning and scaled to the needs of the Islands.

1977 Objectives

During 1977, major work efforts in all 13 regions will continue on the review, modification and refinement of the Planning Work Programs and the Transportation Plans. Updated Transportation Improvement Programs for each region will be produced in 1977. Corridor Planning Study reports initiated during 1976 will be completed and those anticipated during the coming year will be undertaken.

In 1977, it is expected that the process established over the past few years will enable the work efforts in each region to become more product oriented. Through the use of a standard format for unified work programs and lump sum contracts "Red Tape" has been minimized and greater efficiency in the administration of the process and more statewide consistency and compatibility between regional processes will be realized. The new documents have served to define and clarify roles and responsibilities to permit primary emphasis on substantive planning activities in 1977 and thereafter.

1977 Anticipated Products

- Continued management and technical support of the 3C process.
- Revised Unified Work Programs.
- Prospectus (Operation Plan).

- o Transportation Plan (including a TSM element).
- o Improved data and analytical resources.
- o Refined demand models and documentation.
- o Refined networks, traffic zones and trip tables.
- o Policy, fiscal and institutional analysis papers.
- o Corridor Planning Study reports.
- o Annual review reports.
- o Monthly and Quarterly progress reports.
- o Technical memoranda.

RPA FUNDING AND 3C LIAISON COSTS (\$)

RPA	76 HPR		76 PL		1976		77 HPR		77 PL		TOTAL	
	Force Acct.	RPA	Total	RPA	1976	Force Acct.	RPA	Total	RPA	1977	UMTA	
8-1	30,000	17,500	47,500	32,500	80,000	34,000	-	34,000	65,000	99,000	15,000	
8-2	15,000	29,000	44,000	-	44,000	18,000	46,000	64,000	-	64,000	15,000	
8-3	24,000	15,000	39,000	110,000	149,000	29,000	-	29,000	122,250	151,250	8,500	
8-4	30,000	40,000	70,000	45,000	115,000	34,000	-	34,000	80,000	114,000	35,000	
8-5	22,000	7,500	29,500	54,000	83,500	24,000	-	24,000	130,500	154,500	40,000	
8-6	16,000	-	16,000	50,000	66,000	19,000	-	19,000	75,000	94,000	40,000	
8-7	25,000	5,500	30,500	63,000	93,500	24,000	-	24,000	80,000	104,000	40,000	
8-8	44,000	-	44,000	500,000	544,000	47,000	-	47,000	519,000	566,000	750,000	
8-9	16,000	1,000	17,000	70,000	87,000	19,000	-	19,000	75,000	94,000	45,000	
8-10	24,000	11,000	35,000	140,000	175,000	27,000	-	27,000	103,750	130,750	75,000	
8-11	12,000	30,000	42,000	-	42,000	12,000	35,000	47,000	-	47,000	20,000	
8-12	500	7,000	7,500	-	7,500	2,000	15,000	17,000	-	17,000	-	
8-13	2,000	20,000	22,000	-	22,000	2,000	15,000	17,000	-	17,000	-	
TOTAL	260,500	183,500	444,000	1,064,500	1,514,500	291,000	111,000	402,000	1,250,500	1,652,500		

8-1A Berkshire County Regional Planning Study

Staff Responsibility

Project Manager: P. Mahoney, DPW Dist. Plan. Engr.

BTP&D Support Activities: 3C Liaison & Monitoring, P. Chapman
Systems Development Assistance, C. Young
Comp. Trans. Planning Review, T. Vigil

Project Objective

The objective is to supplement and complement the planning activities of the Berkshire Regional Planning Commission by conducting a Regional Planning Study to integrate transportation planning with future land use, and growth and development policies of the region.

A consultant contract has been awarded for the preparation of this study.

1976 Accomplishments

The major work effort for the initial phase of the study was the development of detailed study design, and data collection and analysis.

The BTP&D has provided technical assistance and direction for the study effort.

1977 Objective

The objective is to develop and document regional growth and development policies: evaluate existing conditions, make projections, and analyze alternatives.

Anticipated products include:

- o Lee By-Pass Corridor Planning Study report.
- o Inventory of existing data.
- o Progress reports and an Annual Report.
- o Alternative strategies for future growth and development.
- o Regional Growth Plan.
- o Regional Transportation Plan.

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx. Expend.	1977 Est. PL.	1977 Est. HPR	1977 Est. Total Cost
a) Force Account	0	0	0	0	0
b) Contract	<u>100,000</u>	0	<u>150,000</u>	0	<u>150,000</u>
TOTAL	<u>100,000</u>	0	<u>150,000</u>	0	<u>150,000</u>

BTP&D administrative costs associated with this study are included under other projects.

8-2A Franklin County Rural Highway Public Transportation Demonstration Program

Staff Responsibility

Program Development Section, Supervisor, W. Kondo

Project Objective

The objective is to establish public transportation service in a rural area to demonstrate:

- o The need for it.
- o The physical characteristics and schedule of the service provided.
- o The public benefit derived from it.

This demonstration program is for a two year period and was established under the provisions of Section 147 of the 1973 Federal Highway Aid Act.

1976 Accomplishments

This was the first Rural Highway Public Transportation Demonstration Program to receive Federal approval and was established by contract between MDPW and Franklin County. Buses and related equipment were purchased under the contract provisions, and service was established.

1977 Objectives

The objective is to provide and monitor public transportation services in Franklin County.

Costs

Federal funding provided \$314,000 for this program to cover the initial costs of buses and equipment. In addition, any costs incurred by the State under this program are Federally reimbursable.

BTP&D administrative costs associated with this program are included under Program 11-14.



8-11A Barnstable County Rural Highway Public Transportation
Demonstration Programs

Staff Responsibility

Program Development Section, Supervisor, W. Kondo

Project Objective

As in Program 8-2A, the objective is to establish public transportation service in a rural area to demonstrate:

- o The need for it.
- o The desired physical makeup and service schedule provided.
- o The public benefit derived from it.

This demonstration program is for a two year period and was established under the provisions of Section 147 of the 1973 Federal Highway Aid Act.

1976 Accomplishments

Contract negotiations between MDPW and Barnstable County are nearly complete.

1977 Objectives

The objective is to reach contract agreement, to purchase buses and equipment and to initiate and monitor public transportation service.

Costs

Federal funding provided \$368,000 for this program to cover the initial costs of buses and equipment. In addition, any costs incurred by the State under this program are Federally reimbursable.

BTP&D administrative costs associated with this program are included under Program 11-14.

8-14 Regional Transportation Modelling

Staff Responsibility

Systems Development Unit: Supervisor, T. Collagan
Manager, C. Young

Project Objective

The objective is to assist each RPA in developing regional transportation models and networks and becoming fully proficient in their use, modification and expansion. The intent is for each RPA to have full programming and processing capability for the models and networks required for effective regional transportation planning activities.

The data for development of the regional transportation modelling programs is obtained from the regions, from other BTP&D units through HPR program activities and from other agencies.

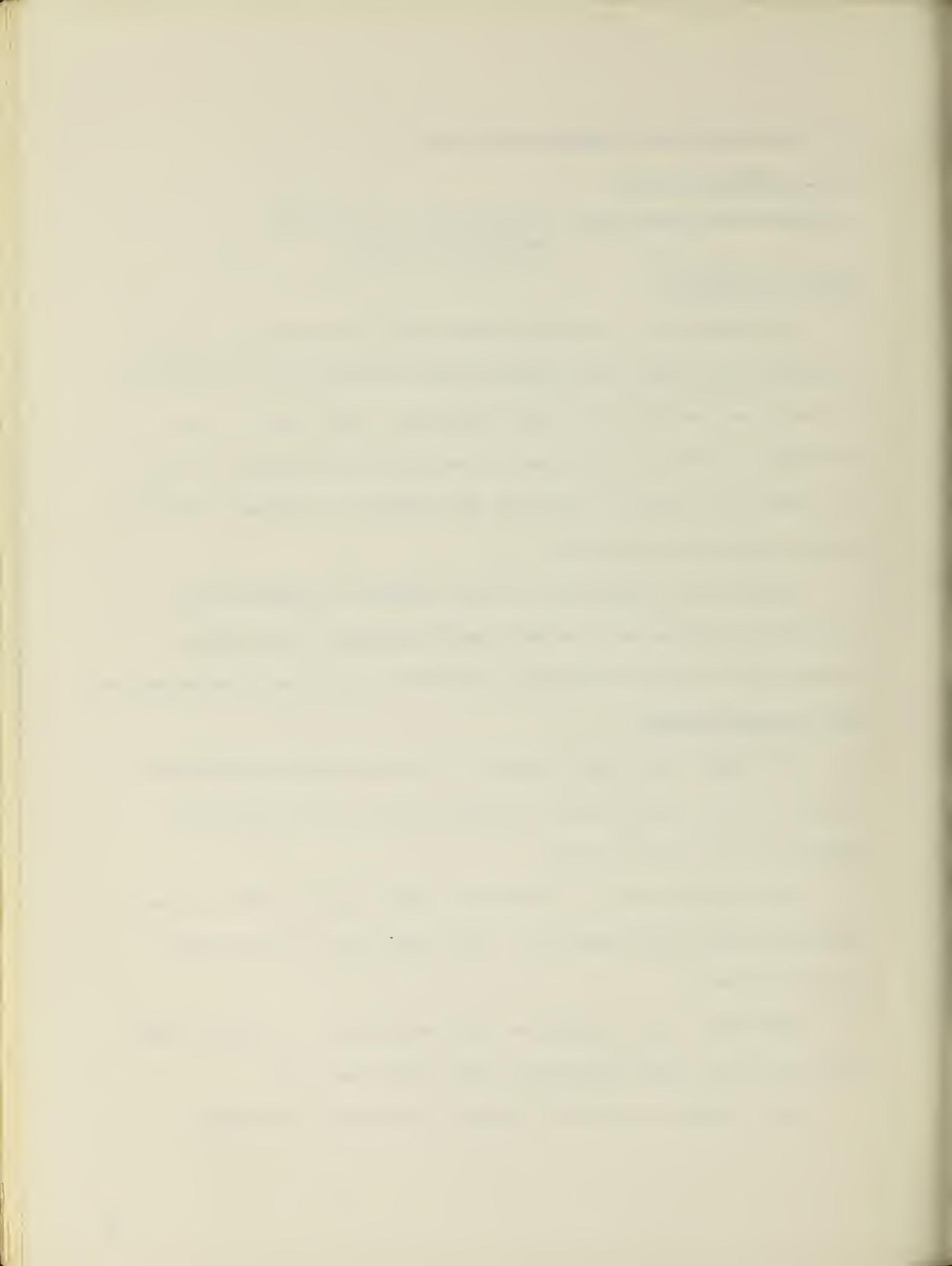
1976 Accomplishments

Four RPA's have been trained to use the computer terminals located in the MDPW District offices and two more will begin training in the near future.

Data accumulation is continuing under various HPR programs and RPA unified work programs. Zone definition is proceeding in all regions.

Eight RPA's are working on base data prior to running their existing urban study models and MAPC's has been run.

This unit has provided technical assistance, analyses,



training sessions and miscellaneous data services in support of the project objectives.

1977 Objectives

Seven RPA's should run and be refining urban study models.

Two RPA's (BCRPC, MRPC) will be working on new models. Operational travel forecasting models should be completed in all nine RPA's with Urban Study models.

This unit will continue to provide the technical assistance and data services referred to above. BTP&D continued support should result in considerable progress by the RPA's in attaining self-sufficiency in the operation of travel-forecasting models.

<u>Costs (\$)</u>	1976	1976	1976
	HPR Est.	Approx. Expen.	HPR Est.
a) Force Account	36,000	3,100	25,000
b) Contract	0	0	0
TOTAL	36,000	3,100(1)	25,000

(1) RPA modelling progressed at a slower rate than anticipated in 1976.

8-15 Eastern Massachusetts Area Transportation Study

Staff Responsibility

Systems Development Unit: Supervisor, E. Collagan

Manager, C. Young

Project Objective

The objective is to develop operational models and networks by updating and refining products of recent planning studies in the Eastern Massachusetts Area:

- PMM Model validation study: networks, zones
- BTPR: Transit network data
- CTPS/MBTA: Transit Data development
- MAPC/Area RPA's: Socio-economic data, etc.

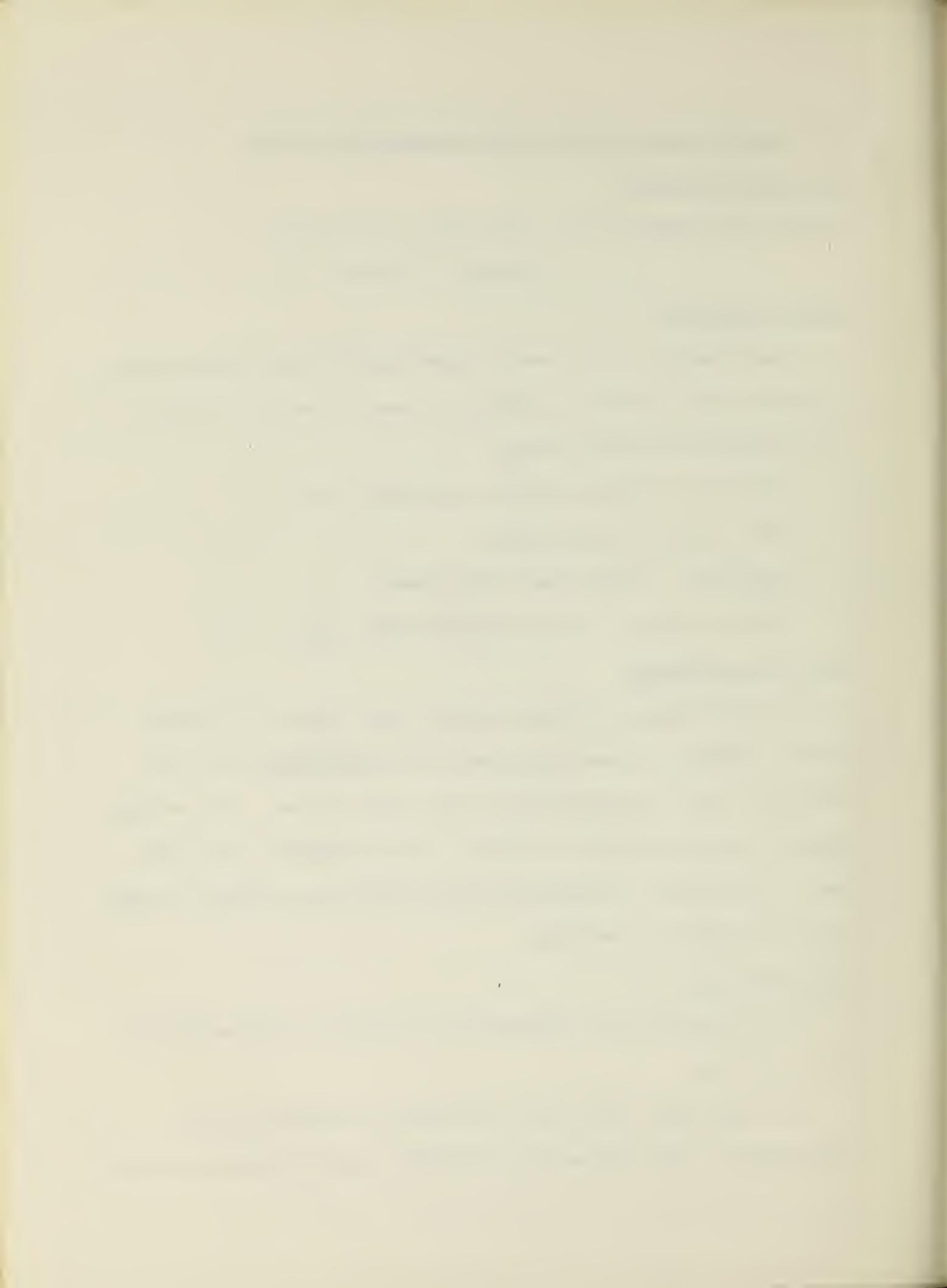
1976 Accomplishments

The AMV Contract for the Eastern Mass. Regional Planning Project (EMRPP) has been completed with preparation of a 1975 simulation with a check against 1975 traffic flows. The contract product includes one set of results for each RPA in the study area. In addition, a new Modal Split Model was designed to meet the requirements of the CTPS.

1977 Objectives

The objective is to implement the contract recommendations, where feasible.

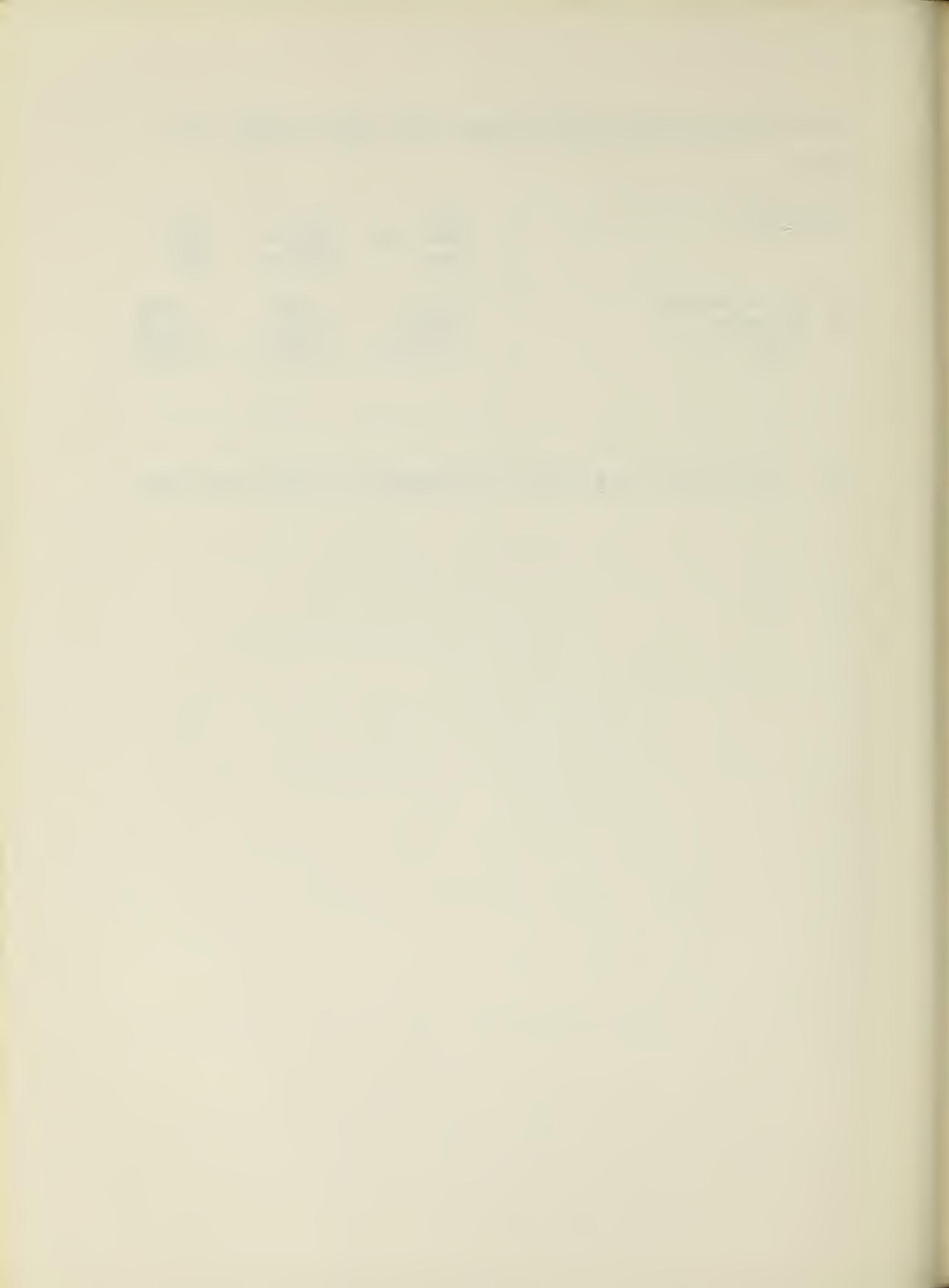
The applicable base data and contract results will be distributed to each RPA within the EMRPP area to improve planning



methodology and modelling processes for both the RPA's and BTP&D.

<u>Costs (\$)</u>	1976 Est. HPR Cost	1976 Approx. Expend.	1977 Est. HPR
a) Force Account	10,000	2,000	5,000
b) Contract	<u>60,000</u>	<u>70,000</u>	<u>70,000</u>
TOTAL	70,000 (1)	72,000	75,000

(1) 1976 estimate was amount anticipated to finish the study.



11-0 SPECIAL STUDIES

11-4 National Transportation Study (NTS)

Staff Responsibility:

Director, T.F. Humphrey

Project Objective

The objective is to evaluate the adequacy of current transportation systems and services, and to recommend changes to Federal programs and policies that would improve transportation efficiency.

1976 Accomplishments

Data required for the Highway portion of the NTS was updated and submitted by the Classification and Needs Unit.

1977 Objective

The objective is to gain greater familiarization with the various manuals related to this study.

<u>Costs (\$)</u>	1976	1977	1977
	Est.	Approx.	Est.
	HPR	Expen.	State/PE
a) Force Account	10,000	(1)	5,000
b) Contract	0	0	0
TOTAL	10,000	0	5,000

(1) Costs associated with this project were included under 1976 Program 7-2.

11-14 Program Development

Staff Responsibility

Program Development Section: Supervisor, W. Kondo

Project Objective

An effective planning process is dynamic and reflects policy emphasis, technical developments, etc.

The project objective is to develop innovative techniques in critical program areas, and to provide guidance to other agencies including the RPA's, in support of a more effective comprehensive transportation planning process.

1976 Accomplishments

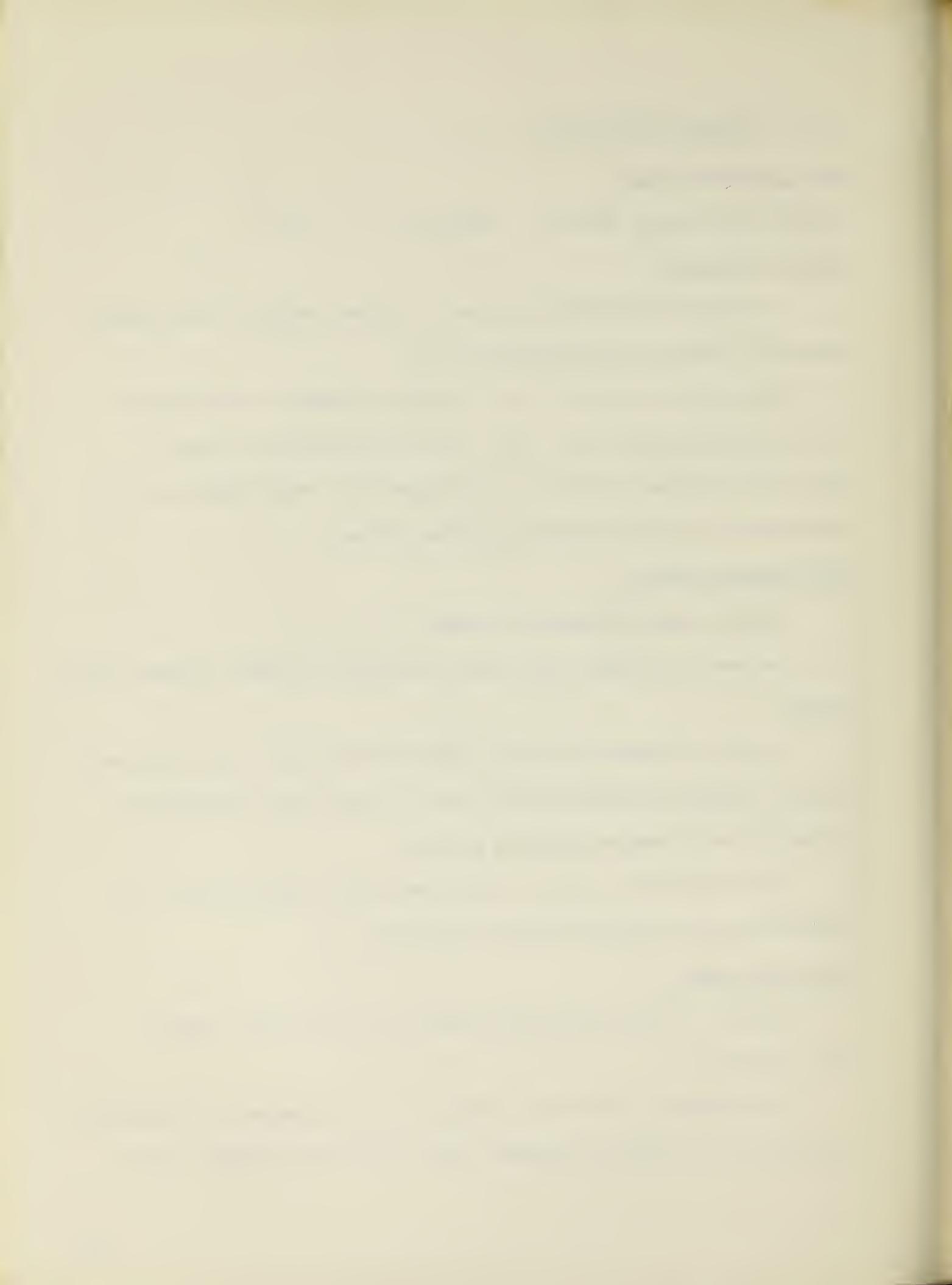
Project accomplishments include:

- o Liaison with AASHTO, TRB, ITE and other national transportation groups
- o A project completion report prepared for the U. Mass contract; Several contract recommendations have already been implemented, including the bikeways planning process.
- o Staff assistance for the development and implementation of transportation planning training programs.

1977 Objectives

Liaison and training activities will be continued under 1977 Program 1-1.

The objective will be to continue the development of innovative transportation planning programs, like the Rural Highway Public



Transportation and Bikeway Demonstration Programs.

<u>Costs (\$)</u>	1976 Est. HPR	1976 Approx. Expen.	1977 Est. HPR
a) Force Account	30,000	25,000	25,000
b) Contract	<u>85,000</u>	<u>25,000</u> (1)	<u>(1)</u>
TOTAL	115,000	50,000	25,000

(1) The U. Mass Contract was not completed during 1976. Additional funding may be required to close out the contract.



